DEPARTMENT OF ECOLOGY
State of Washington

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
REPORT OF EXAMINATION
To Appropriate Public Waters of the State of Washington

APPLICATION DATE	APPLICATION NO.
February 12, 2009	G2-30507

NAME
City of Tacoma, Department of Public Utilities, dba Tacoma Power

ADDRESS/STREET	CITY/STATE	ZIP CODE
3628 South 35th Street	Tacoma, Washington	98409-3192

PUBLIC WATERS TO BE APPROPRIATED

SOURCE
Infiltration gallery and wells

TRIBUTARY OF (IF SURFACE WATERS)

MAXIMUM CUBIC FEET PER SECOND	MAXIMUM GALLONS PER MINUTE	MAXIMUM ACRE-FEET PER YEAR
	2,515	3,000

QUANTITY, TYPE OF USE, PERIOD OF USE
Fish propagation - continuous

LOCATION OF WITHDRAWAL

APPROXIMATE LOCATION OF WITHDRAWAL
1,510 feet South and 910 feet East from the NW corner of Section 26, T. 22 N., R. 04 W. W.M.

LOCATED WITHIN (SMALLEST LEGAL SUBDIVISION)	SECTION	TOWNSHIP	RANGE	WRIA	COUNTY
SW ¼ of the NW ¼ (Infiltration gallery)	26	22 N.	04 W. W.M.	16	Mason
NW ¼ of the NW ¼ (Proposed wells)	26	22 N.	04 W. W.M.	16	Mason

PARCEL NUMBER	LATITUDE	LONGITUDE	DATUM
422262060000 (Infiltration gallery) 422262260000 (Proposed wells)	47°22'11.1"	123°09'39.3"	WGS84

LEGAL DESCRIPTION OF PROPERTY ON WHICH WATER IS TO BE USED
[Attachment 1 shows location of the authorized place of use and point(s) of diversion or withdrawal.]

Parcel 3 (Tax Parcel No. 422262000030) in Government Lot 2 within Section 26, Township 22 North, Range 4 West, W.M as shown on Mason County Boundary Line Adjustment No. 09-35 dated January 21, 2010.

DESCRIPTION OF PROPOSED WORKS

Artesian spring water that surfaced from the hillside behind Cushman No. 2 Powerhouse during a February 1999 landslide is currently collected in an infiltration gallery and flows into a ditch, constructed by Tacoma Power that directs the water to discharge into the powerhouse tailrace and Hood Canal. The proposed water collection system for the new hatchery will consist of a covered concrete box located at the discharge of the infiltration gallery where the water will be collected, and 1,000 feet of 16-inch-diameter water supply pipe to carry the water from the collection point to the proposed hatchery. The collection box will also contain an overflow weir to release water not used in the hatchery into the man-made ditch.

An additional source of water may be needed to operate the hatchery when the amount of artesian spring water is inadequate to supply the hatchery's total water needs. In that event, Tacoma Power plans to drill a well or wells on City property in the vicinity of Cushman No. 2 Powerhouse to augment the hatchery water supply.

DEVELOPMENT SCHEDULE

BEGIN PROJECT BY THIS DATE	COMPLETE PROJECT BY THIS DATE	WATER PUT TO FULL USE BY THIS DATE
July 1, 2012	December 31, 2014	December 31, 2016

PROVISIONS

Department of Ecology personnel, upon presentation of proper credentials, shall have access at reasonable times, to the project location, and to inspect at reasonable times, records of water use, wells, diversions, measuring devices and associated distribution systems for compliance with water law.

An approved flow measuring device shall be installed and maintained for each of the sources authorized by this water right in accordance with the rule "Requirements for Measuring and Reporting Water Use", WAC 173-173. http://www.ecy.wa.gov/programs/wr/measuring/measuringhome.html

Water use data shall be recorded annually and maintained by the property owner for a minimum of five years, and shall be promptly submitted to the Department of Ecology upon request.

WAC 173-173 describes the requirements for data accuracy, device installation and operation, and information reporting. It also allows a water user to petition the Department of Ecology for modifications to some of the requirements.

The water right holder shall file the notice of Proof of Appropriation of water (under which the certificate of water right is issued) when the permanent distribution system has been constructed and the quantity of water required by the project has been put to full beneficial use. The certificate will reflect the extent of the project perfected within the limitations of the water right. Elements of a proof inspection may include, as appropriate, the source(s), system instantaneous capacity, beneficial use(s), annual quantity, place of use, and satisfaction of provisions.

FINDINGS OF FACT AND ORDER

Upon reviewing the investigator's report, I find all facts, relevant and material to the subject application, have been thoroughly investigated. Furthermore, I find the appropriation of water as recommended will not be detrimental to existing rights or to the public interest.

Therefore, I ORDER the approval of Application No. G2-30507 subject to existing rights and the provisions specified above.

You have a right to appeal this decision. To appeal this you must:

- File your appeal with the Pollution Control Hearings Board within 30 days of the "**date of receipt**" of this document. Filing means actual receipt by the Board during regular office hours.
- Serve your appeal on the Department of Ecology within 30 days of the "**date of receipt**" of this document. Service may be accomplished by any of the procedures identified in WAC 371-08-305(10). "Date of receipt" is defined at RCW 43.21B.001(2).

Be sure to do the following:

- Include a copy of this document that you are appealing with your *Notice of Appeal.*
- Serve and file your appeal in paper form; electronic copies are not accepted.

1. To file your appeal with the Pollution Control Hearings Board

Mail appeal to:
The Pollution Control Hearings Board
PO Box 40903
Olympia WA 98504-0903

OR

Deliver your appeal in person to:
The Pollution Control Hearings Board
1111 Israel Road SW Suite 301
Tumwater WA 98501

2. To serve your appeal on the Department of Ecology

Mail appeal to:
The Department of Ecology
Appeals Coordinator
P.O. Box 47608
Olympia WA 98504-7608

OR

Deliver your appeal in person to:
The Department of Ecology
Appeals Coordinator
300 Desmond Dr SE
Lacey WA 98503

3. And send a copy of your appeal to:

Thomas Loranger
Department of Ecology
Southwest Regional Office
PO Box 47775
Olympia WA 98504-7775

For additional information visit the Environmental Hearings Office Website: http://www.eho.wa.gov . To find laws and agency rules visit the Washington State Legislature Website: http://www1.leg.wa.gov/CodeReviser.

Signed at Olympia, Washington, this 14th day of February 2011.

Thomas Loranger, Section Manager
Water Resources Program
Southwest Regional Office

INVESTIGATOR'S REPORT

BACKGROUND

The Cushman Hydroelectric Project (Federal Energy Regulatory Commission [FERC] Project No. 460) is located on the North Fork Skokomish River in Mason County, Washington and has two dams: Cushman No. 1 Dam at Lake Cushman and Cushman No. 2 Dam at Lake Kokanee. Electricity from the Cushman Hydroelectric Project moves to Tacoma on a 40-mile-long transmission line, which crosses the Tacoma Narrows. The project is owned and operated by the Public Utilities Department of the City of Tacoma (doing business as [dba] Tacoma Power).

The City of Tacoma was issued a Project License by FERC on July 30, 1998. The license was appealed and settlement negations with the Skokomish Indian Tribe were engaged. A Settlement Agreement resulting in an Amended FERC License, extends the license term to July 30, 2048, and was made and entered by and among:

- City of Tacoma, Washington;
- United States Department of Commerce, National Marine Fisheries Service (NMFS);
- United States Department of Agriculture, Forest Service (USFS);
- United States Department of the Interior, Fish and Wildlife Service (FWS);
- United States Department of the Interior, Bureau of Indian Affairs (BIA);
- Washington Department of Fish and Wildlife (WDFW);
- Washington Department of Ecology (Ecology); and
- Skokomish Indian Tribe.

Terms included action by the City of Tacoma to work expeditiously with Ecology to secure all needed water rights for Cushman Hydroelectric Project operations and implementation of the "Proposed License Articles".

As a requirement of the Amended FERC License (Article 417), Tacoma Power is required to construct the proposed Saltwater Park Hatchery adjacent to Cushman No. 2 Powerhouse. Water from an existing infiltration gallery and proposed well or wells will be used to hold adult sockeye salmon that return to the North Fork Skokomish River, and to incubate salmon eggs and rear fry. The adult salmon will be trapped in the North Fork Skokomish River and transported to the proposed hatchery where they will be spawned. Salmon eggs will be incubated and the resulting fry reared in the hatchery using water from the infiltration gallery and well(s). The fingerlings will be returned to the North Fork Skokomish watershed for rearing and out-migrating to Hood Canal and the ocean.

If the infiltration gallery or wells do not provide sufficient water for the hatchery, Surface Water Right Application S2-30505 requests a back-up supply of up to 7 cfs from surface water impounded in Lake Kokanee by Cushman No. 2 Dam.

Saltwater Park Hatchery Project Description

For the subject Application, Tacoma Power proposes to withdraw groundwater from an existing infiltration gallery to provide a water supply for the proposed Saltwater Park Hatchery. Tacoma Power also proposes to drill a well or wells to provide addition ground-water supply if the production rate of the infiltration gallery is inadequate to meet the hatchery demands. A summary of the Ground Water Right Application G2-30507 is presented in Table 1.

Table 1 Summary of Application No. G2-30507

Attributes	*Proposed*
Applicant	City of Tacoma, Tacoma Power
Date of Application	February 12, 2009
Instantaneous Quantity	2,515 gallons per minute
Annual Quantity	3,000 acre-feet
Sources	Infiltration gallery and wells
Points of Withdrawal	NW ¼ of NW ¼ of Sec. 26, T. 22 N., R. 04 W. W.M. SW ¼ of NW ¼ of Sec. 26, T. 22 N., R. 04 W. W.M.
Purpose of Use	Fish Propagation
Period of Use	Continuous
Place of Use	Saltwater Park Hatchery Parcel 3, Tract 2, Government Lot 2, Sec 26 T. 22 N., R. 04 W. W.M.

This application is one of eight water right applications filed by Tacoma Power in Mason County, Washington. Tacoma Power submitted multiple water right applications in 1988 and 2009. The water right applications submitted in 2009 were pursuant to the Settlement Agreement resolving the outstanding issues related to the FERC's relicensing of the Cushman Hydroelectric Project. In addition to the surface water and reservoir water right applications directly related to operation of the Cushman Project, Tacoma Power submitted a groundwater right application for fish propagation activities that will be required under the Amended FERC License Articles.

In total, the Tacoma Power applications include requests for surface water (S2-27419, S2-27420, S2-30504, S2-30505 and S2-30506), groundwater (G2-30507) and reservoir (R2-30508 and R2-30509) rights associated with the Lake Cushman and Lake Kokanee reservoirs and the proposed hatchery near the shoreline of Hood Canal. These related applications are summarized in Table 2.

Table 2. Summary of Tacoma Power Water Right Applications.

Project	Control Number	Purpose of Use	Priority Date	Quantity (Qi)	Point of Withdrawal/Diversion	Place of Use Location
Cushman No. 1	S2-27419	Power Generation	7/29/1988	1,500 cfs	22N/4W-5L	22N/4W-5L
	S2-30504	Power Generation	2/12/2009	300 cfs	22N/4W-5L	22N/4W-5L
	R2-30508	Power Generation	2/12/2009	263,350 ac-ft	22N/4W-5L	22N/4W-5L
Cushman No. 2	S2-27420	Power Generation	7/29/1988	1,700 cfs	22N/4W-16F	22N/4W-26E
	S2-30505	Power Generation and Fish Propagation	2/12/2009	300 cfs	22N/4W-16F	22N/4W-26E
	R2-30509	Power Generation and Fish Propagation	2/12/2009	700 ac-ft	22N/4W-16F	22N/4W-26E
North Fork Powerhouse	S2-30506	Power Generation	2/12/2009	350 cfs	22N/4W-16F	22N/4W-16F
Saltwater Park Hatchery	G2-30507	Fish Propagation	2/12/2009	3,142 gpm	22N/4W-26D, 26E	22N/4W-26F

A map showing the locations of the Point of Withdrawal (POW) at the existing infiltration gallery and proposed well locations, the Place of Use (POU) at the proposed hatchery and nearby water-supply well locations is provided as Attachment 1.

Legal Requirements for Application Processing

The following requirements must be met prior to processing a water right application:

- **Public Notice (RCW 90.03.280)**
  A public notice of the application must be published in a local newspaper once a week for two consecutive weeks (RCW 90.03.280). The public notice of application G2-30507 was published in the Shelton-Mason County Journal during the weeks of June 4 and June 11, 2009.
- **State Environmental Policy Act (SEPA)**
  The subject water right is subject to SEPA [WAC 197-11-305 and WAC 197-11-800(4)] because the instantaneous quantity is greater than the threshold of 2,250 gallons per minute. Tacoma Power has proposed adoption of the Final Environmental Impact Statement (EIS) prepared under SEPA by the

FERC, FERC/EIS-0095F, Cushman Hydroelectric Project No. 460, November 1996. To meet the requirements of RCW 43.21C.030(2), the lead agency is adopting the EIS document as being appropriate for the implementation of the Amended FERC License and all its provisions, requirements and articles. The SEPA file number is SEP2009 - 40000135200.

- **Water Resources Statutes and Case Law**
  Chapters 90.03 and 90.44 RCW authorize the appropriation of public water for beneficial use and describe the process for obtaining water rights. Laws governing the water right permitting process are contained in RCW 90.02.250 through 90.03.050. In accordance with RCW 90.02.290, determinations must be made on the following four criteria in order for an application for water rights to be approved:
  - Water must be available;
  - There must be no impairment of existing rights;
  - The water use must be beneficial; and
  - The water use must not be detrimental to the public interest.
- **Administrative Status of Surface Water Bodies**
  Surface water bodies in the region are subject to administrative regulations governing the right to withdraw water for beneficial use. Minimum instream flow regulations for the Skokomish-Dosewallips watershed (WRIA 16) have not been adopted. Administrative rules have been proposed in WAC Chapter 173-516 in 1985. Closure of the North Fork of Skokomish to further water right allocations was proposed but to date has not been implemented.

  Currently, no instream flows and basin closures have been set for WRIA 16 by Ecology. However, instream flow studies have been conducted related to watershed planning in WRIA 16 (Aspect Consulting, 2005). In addition, Watershed Planning Phases 1 through 3 have been completed, including a Draft Level 1 Assessment, and Watershed Management Plan.

INVESTIGATION

The examination of Ground Water Right Application G2-30507 submitted by City of Tacoma, Department of Public Utilities (dba Tacoma Power) was led by consultants from GeoEngineers, Inc. contracted as part of Ecology's cost reimbursement program to facilitate the phased processing of the application. Phil Crane of the Water Resources Program, Ecology (Southwest Region), oversaw the examination and provided review.

The investigation included, but was not limited to, the review of:

- The State Water Code, specifically Title 173 Washington Administrative Code (WAC) and Title 90 Revised Code of Washington (RCW).
- United States Geological Survey (USGS) topographic maps.
- Aspect Consulting, 2005, WRIA 16 Instream Flow Studies, Jefferson and Mason Counties, Washington. Prepared for WRIA 16 Planning Unit. <http://www.ecy.wa.gov/programs/eap/wrias/Planning/docs/wria16_isf_122305.pdf>
- Aspect Consulting, 2009, River and Stream Impairment Analysis, WRIA 16 and 14b, Skokomish-Dosewallips Planning Area. Prepared for WRIA 16 Planning Unit. <http://www.ecy.wa.gov/programs/eap/wrias/Planning/docs/wria16_ir_63009.pdf>
- Golder Associates, Inc. and Economic & Engineering Services, Inc., 2002, Draft Skokomish-Dosewallips Watershed (WRIA 16) Phase II – Level 1 Assessment, Data Compilation and Preliminary Assessment. Prepared for WRIA 16 Planning Unit Steering Committed, Shelton, Washington. <http://www.ecy.wa.gov/biblio/0306014.html>
- Tabor, R.W. and Cady, W.M., 1978, Geologic map of the Olympic Peninsula, U.S. Geological Survey Miscellaneous Investigations Map 994, scale 1:125,000.
- Molenaar, D. and Noble, J.B., 1970, Geology and related ground-water occurrence, southeastern Mason County, Washington: Washington Department of Water Resources Water-Supply Bulletin 29, 145 p., 2 plates.
- Washington State Department of Ecology, 2010, Washington State Well Log Viewer website, <http://apps.ecy.wa.gov/welllog/index.asp> (Accessed December 4, 2009).
- Washington State Department of Ecology, 2010, Water Rights Tracking System (WRTS) website <http://www.ecy.wa.gov/programs/wr/rights/tracking-apps.html> (Accessed January 2010).
- Washington State Department of Natural Resources, Washington Interactive Geologic Map, http://wigm.dnr.wa.gov/, accessed February 9, 2010.
- WRIA 16 Planning Unit, 2006, Watershed Management Plan Skokomish-Dosewallips Water Resource Inventory Area (WRIA 16) including the WRIA 14 South Shore Sub-Basin. <http://www.ecy.wa.gov/programs/eap/wrias/Planning/docs/WRIA%2016%20Draft%205_lo_res.pdf>
- Tacoma Public Utilities website <http://www.mytpu.org/> (Accessed February 5, 2010).
- Settlement Agreement for the Cushman Project, FERC Project No. 460, January 12, 2009. <http://www.mytpu.org/files/library/cushman-dam-settlement.pdf>
- Order on Remand and an Offer of Settlement, Amending License, Authorizing New Powerhouse, and Lifting Stay, City of Tacoma, FERC Project Nos. 460-033, 460-040 and 460-021, issued July 15, 2010. <http://elibrary.ferc.gov/idmws/file_list.asp?accession_num=20100715-3017>
- Information submitted by and conversations and/or meetings with Sarah Hahn and Steve Fisher of Tacoma Power.
- A site visit on May 17, 2010.

Site Visit

Joel Purdy, a Senior Hydrogeologist with GeoEngineers, conducted a site visit on May 17, 2010. Steve Fisher of Tacoma Power gave a tour of the facilities and property. The tour included the inspection of the Cushman Dams Nos. 1 and 2, Lakes Cushman and Kokanee, and the sites of the proposed North Fork Powerhouse and Saltwater Park Hatchery. The location of the infiltration gallery was also visited. Currently, the water emanates from an area beneath a reportedly 10-foot-thick layer of large drain rock and gabions, flows through a ditch around Cushman No. 2 Powerhouse and discharges into the tidally influenced tailrace beneath the powerhouse. Water is collected from a flowing monitoring well and discharged through a weir to the ditch. No construction had occurred at the location of the Saltwater Park Hatchery at the time of the visit.

Existing Cushman Hydroelectric Project Water Rights

Between 1922 and 1953, Tacoma Power was allocated five water rights associated with the Cushman Hydroelectric Project, based on estimates of average requirements for water storage and use for power generation. These rights are summarized in Table 3.

Table 3. Summary of Existing Water Rights for the City of Tacoma's Cushman Hydroelectric Project.

Project	Type	Priority Date	Qi (cfs)	Qa (ac-ft/yr)	Control Number	Application Number	Permit Number	Certificate
Cushman No. 1	Surface Water	12/11/1919	1,000	--	S2-*00353BSCWRIS	353	1956	656
	Storage	12/11/1919	--	190,000	R2-00354CWRIS	354	18	706
Cushman No. 2	Surface Water	2/15/1929	1,000	--	S2-*02525CWRIS	2525	1957	1527
	Storage	2/13/1932	--	7,300	R2-*03766CWRIS	3766	112	1528
McTaggart Creek	Surface Water	5/29/1952	5	--	S2-*11405CWRIS	11405	8814	5548

Hydrologic/Hydrogeologic Evaluation

The project site lies on the southeastern Olympic peninsula, adjacent to Hood Canal, near the town of Potlatch, Washington. The applications listed in Table 2 are related to Tacoma Power's dams and reservoirs on the North Fork Skokomish River that form the Cushman Hydroelectric Project. The proposed Saltwater Park Hatchery is to be located on the shoreline of Hood Canal near the town of Potlatch. All applications are located within the Mason County portion of the Skokomish-Dosewallips Water Resource Inventory Area (WRIA 16).

Geology

The geology of the general project area is depicted by Washington Department of Natural Resources (DNR) on their online map viewer. The geology in the North Fork headwaters generally consists of Tertiary volcanic and sedimentary bedrock (DNR website, 2010). Characterization of the geology and hydrogeology of southeastern Mason County was conducted by Molenaar and Noble (1970). Although the study area did not include the area near the groundwater point of withdrawal at the proposed Saltwater Park Hatchery, much of the general descriptions of characteristics of principal stratigraphic units in the area apply to the hatchery site.

Recent unconsolidated alluvium occurs along the river valley floor as well as deposits of alpine glaciations. Near Hood Canal, unconsolidated deposits formed as the result of erosional and depositional events during multiple glaciations. The last glaciation occurred during the Ice Age approximately 15,000 years ago, known locally as the Vashon Stade of the Fraser Glaciation. The geologic history of the Potlatch area results in complex layering (stratigraphy) of unconsolidated deposits overlying the primarily volcanic bedrock. The typical sequence for Mason County, from youngest to oldest, is alluvium, Vashon recessional outwash, Vashon till and Vashon advance outwash, underlain by older glacial and non-glacial deposits, and the Tertiary bedrock. These deposits are described in Molenaar and Noble (1970) as follows:

- **Alluvium**: Fine-grained silt and sand, with some clay and peat. This unit is found in lowland valleys (e.g. the Skokomish River valley to the south), floodplains and near the mouths of valleys of the larger streams that flow into Hood Canal.
- **Vashon recessional outwash**: Discontinuously bedded loose gravel with some sand, silt and clay. Overlies till in depressions on drift plains and deltaic bedding along north sides of some valleys. This unit is not mapped in the Potlatch vicinity.
- **Vashon till**: Coarse gravel and cobbles in silt-clay matrix. This unit extensively mantles drift plains and generally occurs at surface in the higher elevations in the Potlatch vicinity.
- **Vashon advance outwash**: Unconsolidated gravel, sand and silt. This unit is generally exposed in the Potlatch vicinity within the walls of the incised valleys of the drift plain and sea cliffs.
- **Older unconsolidated deposits**: Deposits beneath the Vashon units found in the Potlatch vicinity include: the Kitsap formation, a non-glacial unit of horizontally bedded silt and fine sand, with some clay and peat occurring near sea level along Hood Canal; Salmon Springs Drift, a pre-Vashon glacial deposit of coarse sand, gravel and some till; and undifferentiated deposits found generally beneath sea level.
- **Tertiary bedrock**: Basalt of the Crescent Formation likely occurs at depth beneath the Potlatch. Other sedimentary formations may also occur in the vicinity.

Hydrogeology

Molenaar and Noble (1970) describe the sources for groundwater supply as being available within limited perched aquifers above the Vashon till and greater potential near or below sea level within the Vashon advance outwash or older deposits. For the subject application, the following is a general description of aquifers that may be potential sources:

- **Perched Aquifer**: This aquifer is found predominantly within Vashon recessional outwash deposits above the Vashon till. Water-bearing zones within the overlying outwash deposits have low to moderate permeability and yield enough groundwater to supply domestic purposes. Infiltration of precipitation is the primary source of recharge to the perched aquifer.
- **Sea Level Aquifer**: This aquifer is found from approximately 100 feet above to 100 feet below sea level within permeable layers of Vashon advance outwash and older deposits. This forms a regional aquifer that is unconfined beneath upland areas and confined near Hood Canal, where artesian flowing wells occur. The upper portion of this aquifer is the likely source of the spring discharge to the infiltration gallery. The proposed well or wells that may be drilled will be completed in the Sea Level Aquifer.

As part of the investigation of subsurface conditions, Ecology Water Well Reports (well logs) in the general vicinity of the Saltwater Park Hatchery application were downloaded from Ecology's Well Log Viewer website. We have reviewed well logs of nearby wells and hydrogeologic information regarding the site vicinity, including the previously discussed sources. The following is a summary of the groundwater sources and hydrogeology in the area:

- The water supply wells in the vicinity of the Saltwater Park Hatchery are completed in unconfined and confined aquifers consisting of unconsolidated deposits. Bedrock is not a primary source of groundwater in the vicinity.
- Unconsolidated deposits are typically composed of glacial and non-glacial deposits. The deposits consist of layers of sand and sand and gravel and separated by finer grained layers of silt and clay.
- Most wells located in the vicinity of Saltwater Park Hatchery are drilled to depths of less than 100 feet below ground. Some of these wells are located along the shoreline and completed in confined aquifers at or below sea level. Some have flowing artesian conditions.
- No nearby wells are completed in the bedrock.
- The movement of groundwater in the project area is generally from upland areas toward discharge points at streams, sea cliffs and at or beneath Hood Canal.
- Typical wells are completed at shallow depths, rarely greater than 100 feet, within the first water-bearing zone encountered. Most wells in the upland areas are completed in perched water-bearing units or within the upper portion of the Sea Level Aquifer, while wells at lower elevations along the shoreline are completed in the confined portions of the Sea Level Aquifer encountered at or below sea level. The wells generally yield below 100 gpm. One well, Minerva Beach Development, was drilled to 100 feet and yielded 150 gpm.

Impairment Considerations

There are no available data such as aquifer tests to characterize the properties of the aquifer described above. In order to evaluate the potential impacts on water resources or impairment of existing water rights, typical hydraulic properties of the source aquifers are assumed based on general properties, such as grain size of the geologic deposits, and information from well logs in the vicinity.

Infiltration Gallery Usage

It is expected that the withdrawals by the applicant using the existing infiltration gallery that drains a 1999 landslide area behind Cushman No. 2 Powerhouse would be from shallow groundwater within the Sea Level Aquifer. The discharge rates measured for the spring vary seasonally and yearly based on records between 2001 and 2009 provided by Tacoma Power. Peak discharge rates are during the early summer months and low discharge rates are during the winter months. The high discharge in the spring likely corresponds to snow-melt and the filling of Lakes Cushman and Kokanee. The gallery discharge rate is between approximately 2.5 to 5.6 cfs. The highest discharge was recorded in May 2004 and the lowest discharge was recorded in January 2009. During periods of expected peak demand at the hatchery, the discharge rates range from approximately 3 to 4 cfs.

The water that currently discharges from the infiltration gallery is routed through a ditch to the tailrace beneath Cushman No. 2 Powerhouse. The proposal is to pipe this water to the hatchery and discharge it to Hood Canal approximately 500 feet south of the tailrace. Excess discharge not used by the hatchery will flow through the ditch.

If the full appropriation is obtained from the infiltration gallery, the area of influence in terms of groundwater withdrawal, aquifer drawdown and potential impairment is primarily limited to the shallow surficial unconsolidated deposits to the west of the spring and is effectively zero because the spring flow is passive. Considering the spring flow occurs whether it is appropriated for the hatchery or not and the spring would have discharged to Hood Canal a short distance away, the groundwater resource impacts of the appropriation are minimal. This proposed use of spring discharge to supply the Saltwater Park Hatchery would not therefore impair or impact the flow of any natural surface water bodies or impair nearby groundwater users, based on our evaluation of available information.

Well Usage

If the water demand for the proposed Saltwater Park Hatchery exceeds the amount provided by the water captured in the infiltration gallery, the balance of the water supply will be from wells. It is expected that the withdrawals by the applicant related to the proposed new well(s) located in the designated area to the north of Cushman No. 2 Powerhouse would be from the Sea Level Aquifer, which may be either confined or unconfined. To produce up to the full amount of 2,515 gpm (5.6 cfs) during times of peak demand at the hatchery, multiple wells will likely have to be drilled.

The boundaries of the area of influence for well usage were conservatively estimated to take into account the potential error range of the recharge rate assumption based on the drawdown cone likely to develop within a confined aquifer. The area of influence for full usage of 3,000 acre-feet per year (average pumping of 1,860 gpm) from the new wells would conservatively extend up to a radius of between 1,000 feet to ½ mile based on assumed hydraulic properties of the aquifer being a transmissivity of 10,000 gallons per day per ft (1,340 feet squared per day), storage coefficient of 0.001 and limited recharge. This area of influence extends in an arc inland of the well locations.

Potential for Impairment of Existing Rights

There are 14 known wells within 2,000 feet of the proposed point of withdrawal, as shown on Attachment 1. All of the 14 wells are cross-gradient to the proposed withdrawal, which reduces the potential for drawdown impacts. None of the wells are located within the area of influence upgradient from the proposed well locations. Therefore, impairment of senior ground water users is not expected.

There are 12 existing water rights within ½ mile that are not controlled by the City of Tacoma. Of the 12 rights, four are ground water rights for quantities ranging from 50 to 60 gpm and eight are surface water rights for quantities ranging from 0.01 to 0.33 cfs. There are 11 claims within ½ mile.

There are three water right applications within ½ mile; one is senior to the priority date of February 12, 2009. The senior application (G2-29168) was submitted by Roberts-Jackson & Associates for groundwater withdrawal of 150 gpm for the Minerva Beach Resort water system (Washington Department of Health ID No. 55060) from an existing well located to the south of the proposed Saltwater Park Hatchery (see Attachment 1). The well was drilled in 1979 to a depth of 100 feet and is perforated from 75 to 95 feet. This well is located cross-gradient from the hatchery source and will not be impacted by the withdrawal from the infiltration gallery.

Potential for Seawater Intrusion

The infiltration gallery is capturing groundwater discharge above sea level and thus has no potential for seawater intrusion with this use.

For ground water wells completed in aquifers that are hydraulically connected with saltwater, pumping may induce the migration of saltwater into the freshwater aquifers. This is known as seawater intrusion. It is presumed that if wells are drilled to supplement the infiltration gallery discharge, the wells will be located approximately 1,000 feet inland and completed such that the bottom of each well is at or above sea level to intercept ground water from the same aquifer source as the infiltration gallery. Thus, the wells would not draw down the aquifer water level below sea level and seawater intrusion is not of concern.

Water Availability

The anticipated operation of the infiltration gallery is not expected to impact existing water users. The proposed water source for the hatchery is located in area that experiences abundant rainfall and ground water recharge which have sustained reliable flow from the spring and infiltration gallery since 2002. Therefore, the water is physically available.

There are no closures on surface water bodies in WRIA 16. Groundwater to be captured from the infiltration gallery or wells would naturally discharge to salt water of Hood Canal. No impact to surface (fresh) water is expected to occur from the operation of the infiltration gallery or from wells completed in the same portion of the aquifer that forms the source for the infiltration gallery. Therefore, groundwater is legally available for appropriation.

Potential for Impairment

Information pertaining to the existing water rights in WRIA 16 were examined for water rights in the vicinity of the proposed infiltration gallery. Use of the infiltration gallery is not expected to impair existing senior water right holders.

Public Interest Considerations

RCW 90.03.290 requires that a proposed appropriation not be detrimental to the public interest.

The 1971 Water Resources Act provides the most comprehensive list of legislative policies that guide the consideration of public interest in the allocation of water. These policies generally require a balancing of the state's natural resources and values with the state's economic well-being. Specifically, the policies require allocation of water in a manner that preserves instream resources, protects the quality of the water, provides

adequate and safe supplies of water to serve public need, and makes water available to support the economic well-being of the state and its citizens.

The year-round withdrawal of up to 2,515 gpm of groundwater under this water right for fish propagation use is consistent with state policy without adversely impacting instream flows or other public needs and values. No detriment to public interest could be identified during the examination of the subject application.

Consideration of Protests and Comments

Article VI of the Tacoma/Skokomish Tribe Settlement Agreement, Tribe Support for Amended Project License and Water Right Applications, states that the Tribe withdrew any pending objections to Tacoma Power's water right applications. See Attachment 2.

No other protests or comments were received in lieu of the comprehensive Settlement Agreement that was successfully negotiated amongst various stakeholders, the terms of which are embodied in the Amended FERC License.

CONCLUSIONS

Water must be available

The Saltwater Park Hatchery is located in an area that receives abundant rainfall and groundwater recharge. Results of the groundwater analysis indicate no significant water level drawdown from infiltration gallery or pumping of wells is expected at distance. It is concluded that sufficient water is available to provide 2,515 gpm.

No legal constraints to the use of the water by this right were identified, and the water is considered legally available.

There must be no impairment of existing rights.

The requested withdrawal from the spring-fed infiltration gallery is not expected to interrupt or interfere with the availability of water to an existing right.

The water use must be beneficial.

Fish propagation is considered a beneficial use in accordance with RCW 90.54.020.

The water use must not be detrimental to the public interest.

No considerations that are detrimental to the public interest were identified for the proposed diversion of water from the spring-fed infiltration gallery.

RECOMMENDATIONS

Based on the above investigation and conclusions, I recommend that the Application No. G2-30507 be authorized in the amounts and within the limitations listed below and subject to the provisions beginning on Page 2.

Purpose of Use and Authorized Quantities

The amount of water recommended is a maximum limit and the water user may only use that amount of water within the specified limit that is reasonable and beneficial.

- 2,515 gpm
- 3,000 acre-feet per year
- Fish Propagation

Points of Withdrawal

NW¼ of the NW¼ of Section 26, Township 22 North, Range 04 West W.M.
SW¼ of the NW¼ of Section 26, Township 22 North, Range 04 West W.M.

Place of Use

As described on Page 1 of this Report of Examination.

Report Reviewed by: Phil Crane — Phil Crane

2/9/2011 — Date

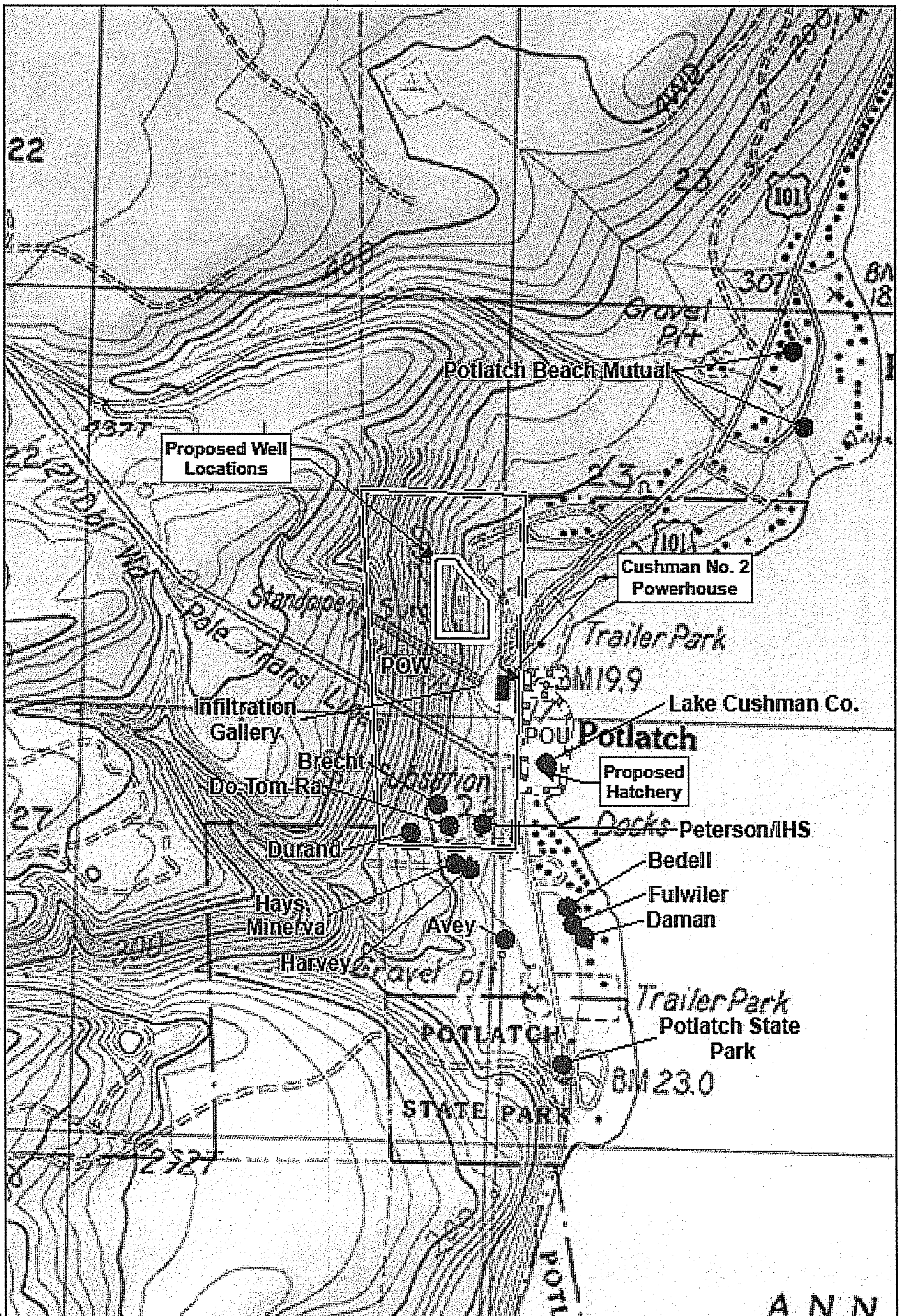
If you need this publication in an alternate format, please call Water Resources Program at 360 407-6600. Persons with hearing loss can call 711 for Washington Relay Service. Persons with a speech disability can call 877-833-6341.

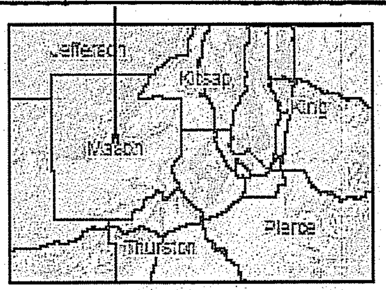
Attachment 2- Tacoma/Skokomish Tribe Settlement Agreement Article VI

ARTICLE VI
TRIBE SUPPORT FOR AMENDED PROJECT LICENSE AND WATER RIGHT APPLICATIONS

6.1 Amended Project License. Within thirty (30) days of execution of the Agreement, the Tribe agrees to deliver a letter to FERC, executed by the Tribal Council, notifying FERC of the Tribe's full support for: (1) FERC's incorporation, without modification, of the Settlement License Articles as enforceable articles of the Amended Project License; and (2) the term of the license being extended to June 30, 2048. The Tribe will cooperate fully with Tacoma to obtain an Amended Project License which is consistent with the Amended License Settlement Agreement. The Tribe agrees that, so long as this Agreement remains in effect, it will refrain from taking any position publicly or privately that indicates Tacoma's relicensing application should be denied or that the Settlement License Articles are deficient.

6.2 Washington Department of Ecology Approval. From and after the Effective Date, the Tribe covenants to withdraw any pending objections to Tacoma's application for water rights (Washington Department of Ecology Water Right Application Numbers S2-27419 and S2-27420) and to not object to additional water right applications necessary to store or divert water for the Project's existing hydroelectric generation, the North Fork Powerhouse (FERC Settlement Agreement, Appendix 8) or to implement the Settlement License Articles. Within sixty (60) days of the Effective Date, the Tribe agrees to deliver a letter to WDOE, executed by the Tribal Council, notifying WDOE of the Tribe's withdrawal of any objections relating to Tacoma's application for water rights (Washington Department of Ecology Water Right Application Numbers S2-27419 and S2-27420) and that the Tribe does not object to additional water right applications necessary to store or divert water for the Project's existing hydroelectric generation, the North Fork Powerhouse (FERC Settlement Agreement, Appendix 8) and Amended Project License fish supplementation facilities. Nothing in this Agreement shall have, or be construed to have, any effect on the existence, extent, or quantity of the Tribe's federally reserved water rights. Tacoma expressly acknowledges and agrees that this Agreement has no past, present, or future impact or effect of any kind on the Tribe's federally reserved water rights.





Water Supply Wells
POW = Point of Withdrawl
POU = Place of Use

1,000 0 1,000
Feet

Notes:
1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. cannot guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.
Data Sources: USGS Topographic Maps, ESRI Data 2008.
Projection: NAD 1983, Washington South (ft).

G2-30507

Tacoma Power - Saltwater Park Hatchery
Mason County, Washington

GeoEngineers

Attachment 1